

No. 6,060,768 (hereinafter "Hayashida"); (vi) rejected claims 17 and 18 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of U.S. Patent No. 5,233,220 (hereinafter "Lamson"); (vii) rejected claim 7 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Seko and Yamada; and (viii) rejected claim 19 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Lamson and U.S. Patent No. 6,448,633 (hereinafter "Yee").

In response to the Office Action, Applicant traverses the rejections to claims 1-20.

With regard to the rejection of claims 1-5, 10, 15 and 16 under 35 U.S.C. §102(b) as being anticipated by Sumi, Applicant asserts that such claims are patentable for at least the reasons presented below.

It is well-established law that "[a] claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference." See, e.g., *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 ( Fed. Cir. 1987). See also, M.P.E.P. §2131. Applicant asserts that Sumi fails to teach or suggest each and every element respectively recited in independent claims 1 and 16 and, thus, the §102(b) rejection of claims 1-5, 10, 15 and 16 based on Sumi clearly fails to meet the above legal requirements for anticipation. Support for this assertion follows.

Independent claim 1 of the present invention recites a packaged integrated circuit having a die, a package body, a leadframe, and at least one additional lead. The leadframe has a subset of leads separated by a lead-to-lead pitch, and at least two adjacent leads separated by a space larger than the pitch. The at least one additional lead is disposed on an underside of the package body, and is connectable to a circuit mounting structure trace passing between the adjacent leads separated by a space larger than the pitch.

Sumi discloses a semiconductor package that prevents the formation of a gap between a seal material and feed leads. The semiconductor package includes a substantially H-shaped feed lead with the ends of the upper legs secured to the substrate.

Sumi fails to disclose a leadframe of the integrated circuit having at least two adjacent leads separated by a space larger than the pitch. Sumi only shows leads that are separated by a single pitch, as is evident from the evenly spaced leads in FIG. 1 and evenly spaced pads arranged on the board in FIG. 2. There is no disclosure of two adjacent leads having a separation that is greater than

this pitch. Sumi also fails to disclose an additional lead disposed on an underside of the package body, being connectable to a circuit mounting structure trace passing between the adjacent leads separated by a space larger than the pitch. While FIG. 1 of Sumi shows the inside of a package body, and each of the leads protruding from one of the sides of the package body, there is no disclosure of an additional lead disposed on the underside of the package body. Further, since there is no disclosure of two leads separated by a space greater than the pitch, and since there is no disclosure of an additional lead on the underside of the package body, there is also no disclosure of the additional lead being connectable to a circuit mounting structure trace that passes between the adjacent leads separated by a space larger than the pitch.

Independent claim 16 of the present invention recites a leadframe having a subset of leads separated by a lead-to-lead pitch, and at least two adjacent leads separated by a space larger than the pitch, allowing a circuit mounting structure trace to pass through the space larger than the pitch so that the trace is connectable to an additional lead on an underside of the package body.

As described above, with regard to claim 1, Sumi fails to disclose at least two adjacent leads separated by a space larger than the pitch, that allows a circuit mounting structure trace to pass through the space so that it may be connectable to an additional lead on an underside of the package body.

Dependent claims 2-5, 10 and 15 are patentable at least by virtue of their dependency from independent claim 1. An explanation of the patentability of independent claim 1 is provided above. Dependent claims 2-5, 10 and 15 also recite patentable subject matter in their own right. For example, regarding claim 3, Sumi fails to disclose that the at least one additional lead is substantially flush with the underside of the package body. Accordingly, withdrawal of the rejection of claims 1-5, 10, 15 and 16 under §102(b) is respectfully requested.

With regard to the rejection of claims 11-14 under 35 U.S.C. §103(a) as being unpatentable over Sumi, Applicant asserts that dependent claims 11-14 are patentable at least by virtue of their dependency from independent claim 1. An explanation of the patentability of independent claim 1 is provided above. Dependent claims 11-14 also recite patentable subject matter in their own right. For example, Sumi fails to disclose, suggest or render obvious that the space larger than the pitch

is determined by the equation,  $LP = wx + p(x + 1)$ , as recited in claim 14. Accordingly, withdrawal of the rejection of claims 11-14 under §103(a) is respectfully requested.

With regard to the rejection of claims 6 and 9 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Seko, Applicant asserts that dependent claims 6 and 9 are patentable at least by virtue of their dependency from independent claim 1. An explanation of the patentability of independent claim 1 is provided above.

Seko discloses a semiconductor device having a chip-on-film, in which a semiconductor chip is mounted on a flexible wiring board. Thus, the combination of Sumi and Seko fails to disclose a leadframe of the integrated circuit having at least two adjacent leads separated by a space larger than the pitch, and an additional lead disposed on an underside of the package body, being connectable to a circuit mounting structure trace passing between the adjacent leads separated by a space larger than the pitch, as recited in claim 1. Dependent claims 6 and 9 also recite patentable subject matter in their own right. Accordingly, withdrawal of the rejection of claims 6 and 9 under §103(a) is respectfully requested.

With regard to the rejection of claim 8 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Yamada, Applicant asserts that dependent claim 8 is patentable at least by virtue of its dependency from independent claim 1. An explanation of the patentability of independent claim 1 is provided above.

Yamada discloses a semiconductor device capable of adjusting the intervals between adjacent wires for electrically connecting electrode pads and leads. Thus, the combination of Sumi and Yamada fails to disclose an additional lead disposed on an underside of the package body, being connectable to a circuit mounting structure trace passing between the adjacent leads separated by a space larger than the pitch, as recited in claim 1. Dependent claim 8 also recites patentable subject matter in its own right. Accordingly, withdrawal of the rejection of claim 8 under §103(a) is respectfully requested.

With regard to the rejection of claim 20 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Hayashida, Applicant asserts that such claims are patentable for at least the reasons presented below.

Independent claim 20 recites a circuit mounting structure comprising at least one electrical connector, a plurality of traces and at least one packaged integrated circuit, as recited in claim 1, mounted thereon.

Hayashida discloses a semiconductor device with leads electrically connected with electrode pads. Projections are formed in the leads and are used for external connection ports. As described above with regard to claim 1, Sumi fails to disclose an additional lead on an underside of the package body that is connectable to a circuit mounting structure trace passing between the adjacent leads separated by the space larger than the pitch. While Hayashida describes a projection of the lead that may be used for an external connection port on the underside of the package body, the proposed combination fails to disclose two adjacent leads separated by a space larger than the pitch allowing a circuit mounting structure trace to pass through the space so that the trace is connectable to an additional lead on an underside of the package body. Accordingly, withdrawal of the rejection of claim 20 under §103(a) is respectfully requested.

With regard to the rejection of claims 17 and 18 under 35 U.S.C. §103(a) as being unpatentable of Sumi in view of Lamson, Applicant asserts that dependent claims 17 and 18 are patentable at least by virtue of their dependency from independent claim 16. An explanation of the patentability of independent claim 16 is provided above.

Lamson discloses a leadframe having balanced capacitance for use with integrated circuitry packaging. Each conductive lead has substantially the identical capacitance as the remaining conductive leads. Thus, the combination of Sumi and Lamson fails to disclose a leadframe having a subset of leads separated by a lead-to-lead pitch, and at least two adjacent leads separated by a space larger than the pitch, allowing a circuit mounting structure trace to pass through the space larger than the pitch so that a trace is connectable to an additional lead on an underside of the package body, as recited in claim 16. Dependent claims 17 and 18 also recite patentable subject matter in their own right. Accordingly, withdrawal of the rejection of claims 17 and 18 under §103(a) is respectfully requested.

With regard to the rejection of claim 7 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Seko and Yamada, Applicant asserts that dependent claim 7 is patentable at least

by virtue of its dependency from independent claim 1. An explanation of the patentability of independent claim 1 is provided above.

The combination of Sumi, Seko and Yamada fails to disclose an additional lead disposed on an underside of the package body, being connectable to a circuit mounting structure trace passing between adjacent leads separated by a space larger than the pitch, as recited in claim 1. Dependent claim 7 also recites patentable subject matter in its own right. Accordingly, withdrawal of the rejection of claim 7 under §103(a) is respectfully requested.

With regard to the rejection of claim 19 under 35 U.S.C. §103(a) as being unpatentable over Sumi in view of Lamson and Yee, Applicant asserts that dependent claim 19 is patentable at least by virtue of its dependency from independent claim 16. An explanation of the patentability of independent claim 16 is provided above.

Yee discloses a semiconductor package and method of making a semiconductor packaging having lead locks to secure leads to encapsulant. The lead locks of Yee simply lock the leads in position. Thus, the combination of Sumi, Lamson and Yee fails to disclose a leadframe having a subset of leads separated by a lead-to-lead pitch, and at least two adjacent leads separated by a space larger than the pitch, allowing a circuit mounting structure trace to pass through the space larger than the pitch so that a trace is connectable to an additional lead on an underside of the package body, as recited in claim 16.

Dependent claim 19 also recites patentable subject matter in its own right. The combination of Sumi, Lamson and Yee fails to disclose a U-shaped locking mechanism coupled between the adjacent leads having a space larger than the pitch, which maintains the space larger than the pitch, having a central portion arranged within the package body and first and second legs each extending toward a perimeter of the package body. Accordingly, withdrawal of the rejection of claim 19 under §103(a) is respectfully requested.

In view of the above, Applicant believes that claims 1-20 are in condition for allowance, and respectfully requests withdrawal of the §102(b) and §103(a) rejections.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert W. Griffith". The signature is fluid and cursive, with the first name "Robert" and last name "Griffith" being clearly legible.

Date: March 14, 2005

Robert W. Griffith  
Attorney for Applicant(s)  
Reg. No. 48,956  
Ryan, Mason & Lewis, LLP  
90 Forest Avenue  
Locust Valley, NY 11560  
(516) 759-4547